

COATED AND MAGNETIC PARTICLES AND APPLICATIONS THEREOF

ABSTRACT OF THE DISCLOSURE

5 A method of using coated and/or magnetic particles to deposit structures including solder joints, bumps, vias, bond rings, and the like. The particles may be coated with a solderable material. For solder joints, after reflow the solder material may comprise unmelted particles in a matrix, thereby increasing the strength of the joint and decreasing the pitch of an array of joints. The particle and coating may form a higher melting point alloy, permitting multiple subsequent reflow steps. The particles and/or the coating
10 may be magnetic. External magnetic fields may be applied during deposition to precisely control the particle loading and deposition location. Elements with incompatible electropotentials may thereby be electrodeposited in a single step. Using such fields permits the fill of high aspect ratio structures such as vias without requiring complete seed metallization of the structure. Also, a catalyst consisting of a magnetic particle coated with a catalytic material, optionally including an intermediate layer.